REMARKS

The undersigned acknowledges with appreciation the telephone interview between the undersigned and Examiner Basil Katcheves on December 10, 2009, wherein the Barrett (US 4,649,682) and Bodnar (US 6,708,459) references were discussed.

Reconsideration of this application and the rejection of the pending claims are respectfully requested. Applicant has attempted to address every objection and ground for rejection in the Office Action dated November 2, 2009 (Paper No. 20091029).

Claims 1-31 are cancelled. For this reason, the rejection of claims 7 and 8 under 35 U.S.C. §112 are moot.

Applicant has added new claims 32-38 that are directed to a composite wall panel comprising an air entrained concrete slab having a specific density in combination with metal frame members partially embedded in the concrete. The features of claim 32 are not disclosed or suggested in U.S. Patent No. 4,649,682 to Barrett and U.S. Patent No. 6,708,459 to Bodnar as more fully briefed below.

Claim 32 recites, in part, plural metal frame members partially embedded in a concrete slab "wherein said concrete slab has a density of 400 to 1760 kg/m^3 (25 to 110 pcf) and includes entrained air that lowers the thermal conductivity of the slab and forms a thermal barrier between said metal frame members and the ambient exterior of the structure." Claim 32 also recites, in part, "a single concrete slab having an exterior face configured to be exposed to the ambient exterior of the structure and an interior face configured for the

interior of the structure". These features are supported in the specification at paragraphs [0036], [0043], [0046] and [0075] which state:

> "[0036] ...Entraining air, or other gases such as hydrogen or oxygen, into the concrete lowers the density of aerated concrete while improving workability.
>
> "[0043] Another characteristic of aerated concrete is that it has improved insulation and low thermal conductivity properties...
>
> "[0046] Referring to FIGS. 3 and 6, the frame 14 is embedded in the rear face 18 of the concrete slab 12. When the panel 10 is installed on a building, the frame 14 is oriented towards the interior side of the structure and the concrete slab 12 is oriented towards the exterior side of the structure...
>
> "[0075] ...In this manner, the concrete slab 12 of aerated concrete forms a thermal barrier between the frame 14 and the ambient..."

Barrett discloses a frame embedded in concrete, and Bodnar is cited for disclosing a reinforcing layer. However, neither reference discloses a metal frame embedded in air entrained concrete having a density of 400 to 1760 kg/m^3 (25 to 110 pcf). The Examiner asserts that it would be an obvious design choice to use concrete of the claimed density. Applicant submits, as supported by the enclosed Declaration of Brian Smith and the teachings of the references of record, that it is not an obvious design choice to use air entrained concrete of the claimed density range in combination with the embedded metal frame in an exterior wall panel.

In the Declaration submitted with this Amendment, Mr. Smith notes that to his knowledge, one of the reasons that the industry avoided embedding frame members into concrete in exterior wall panels is due to the heat transfer that occurs between the metal frame and the concrete, which can result in problematic moisture condensate on the interior frame members. See also, Bodnar, col. 1, lines 40-43.

In the Declaration, Mr. Smith notes that the problem of heat transfer was conventionally solved by spacing the frame members a distance apart from the concrete panel. Another way of dealing with the known heat transfer problem was to provide openings in the frame to slow the heat transfer through the frame. See Smith Declaration, and Bodnar, col. 2, lines 32-52.

With respect to spacing the frame members from the concrete, Mr. Smith's statements are supported by the O'Konski reference which states: "In particular, the maintaining of a spaced relation between the wall surface elements and the steel studding provides ... more effective insulation against transmission of heat and cold through the walls" (at column 3, lines 11-19, O'Konski). So to slow heat transfer, O'Konski spaces the frame from the concrete.

With respect to providing the frame with openings, Mr. Smith's statements are supported by the Bodnar reference which states: "Accordingly, studs have been proposed with reduced heat transfer properties. These studs were formed with generally triangular or trapezoidal openings...Heat could pass along the struts but not where there were

openings...In fact a reduction of heat transfer across the stud is possible using circular openings in the studs" (at column 1, lines 44-46, and column 2, lines 34-36). So to slow the heat transfer, Bodnar adds openings to make the flange non-continuous with the web. See Bodnar Fig. 2, openings 32.

Departing from the teachings of Bodnar and O'Konski, Mr. Smith discovered that metal frame members can be successfully embedded in air entrained concrete because air entrained concrete of the claimed density range is a better insulator, reduces heat transfer, and forms a thermal barrier between the metal frame members and the ambient exterior of the structure, which was not recognized by the prior art (as evidenced by O'Konski and Bodnar).

Further, while it is the Examiner's position that routine experimentation would result in concrete of the claimed density due to reducing the weight of the panel,[1] the weight of the panel is not the variable being optimized in the present case. Reduced thermal conductivity is being optimized, but addressing the thermal conductivity in metal frame members with air entrained concrete was not recognized in the composite wall panel art. Referring to MPEP 2144.05(II)(B), a particular parameter must first be recognized before the determination of the optimum or workable ranges can be characterized as a routine experimentation. Since the prior art suggested spacing the frame from the concrete, or

1 Bodnar mentions using light weight concrete or special high strength concrete to reduce the weight of the panel (col. 9, lines 31-33) but does not recognize the insulting affect of air entrained, light weight concrete.

providing the frame with openings, the prior art did not recognize that the concrete could provide a thermal barrier from heat transfer from the frame as a function of the density of concrete, and therefore thermal conductivity was not recognized as a result-effective variable. For this reason, the feature of "wherein said concrete slab has a density of 400 to 1760 kg/m^3 (25 to 110 pcf) and includes entrained air that lowers the thermal conductivity of the slab and forms a thermal barrier between said metal frame members and the ambient exterior of the structure" is not an obvious design choice.

Furthermore, whereas light weight concrete of the claimed density, with and without embedded reinforcing is known, the claimed combination of C-shaped metal fame members having one flange fully embedded in the air entrained concrete slab with the web projecting from the slab and second non-embedded flange spaced apart from the slab, in an exterior wall panel is not disclosed in the art of record, and is submitted to be patentable.

In addition to Barrett failing to disclose or suggest air entrained concrete of the claimed density, Barrett also does not disclose or suggest a second flange that is "non-embedded in concrete and spaced apart from the interior surface of said (single) concrete slab."

Bodnar is cited for disclosing a reinforcing layer 72, however the reinforcing layer 72 of Bodnar is not embedded in slab 78. Further, the concrete slab 78 of Bodnar is an interior slab, not an exterior slab. The slab into which the frame is embedded is slab 70, but

the reinforcing layer R in slab 70 is not attached to the frame member. Thus, Bodnar does not disclose the feature of "a reinforcing layer fastened to said first flange of at least one of said frame members and being fully embedded in said concrete slab" where the slab is an exterior wall panel, as in claim 32. Further, referring to FIG. 2, where the frame of Bodnar is embedded in the slab 70, the frame is has openings 32, i.e. the flange is not continuous with the end of the web.

Dependent claim 38 recites a concrete slab having a density of 960 to 1360 kg/m^3 (60 to 85 pcf). The original specification discloses a range of 25 to 110 pcf at paragraph [0040] of the specification. Applicant submits that where, as here, a broad range is taught in the original specification, the claiming of a narrower range meets the written description requirement unless another, different, invention is defined by the narrower range. *See* MPEP §2163.05 citing In re Wertheim, 191 USPQ 90, 98 (CCPA 1976)(where original specification disclosed 25% - 60% and examples of 36% and 50%, amendment to specify range of 35% to 60% met the written description requirement.). As another, different invention is not defined by the narrower claimed range, Applicant submits that claim 38 meets the written description requirement.

If there are remaining issues which may be resolved by a telephone interview, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

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